



BlueCross BlueShield of New Mexico

# Neuroscience Hacks

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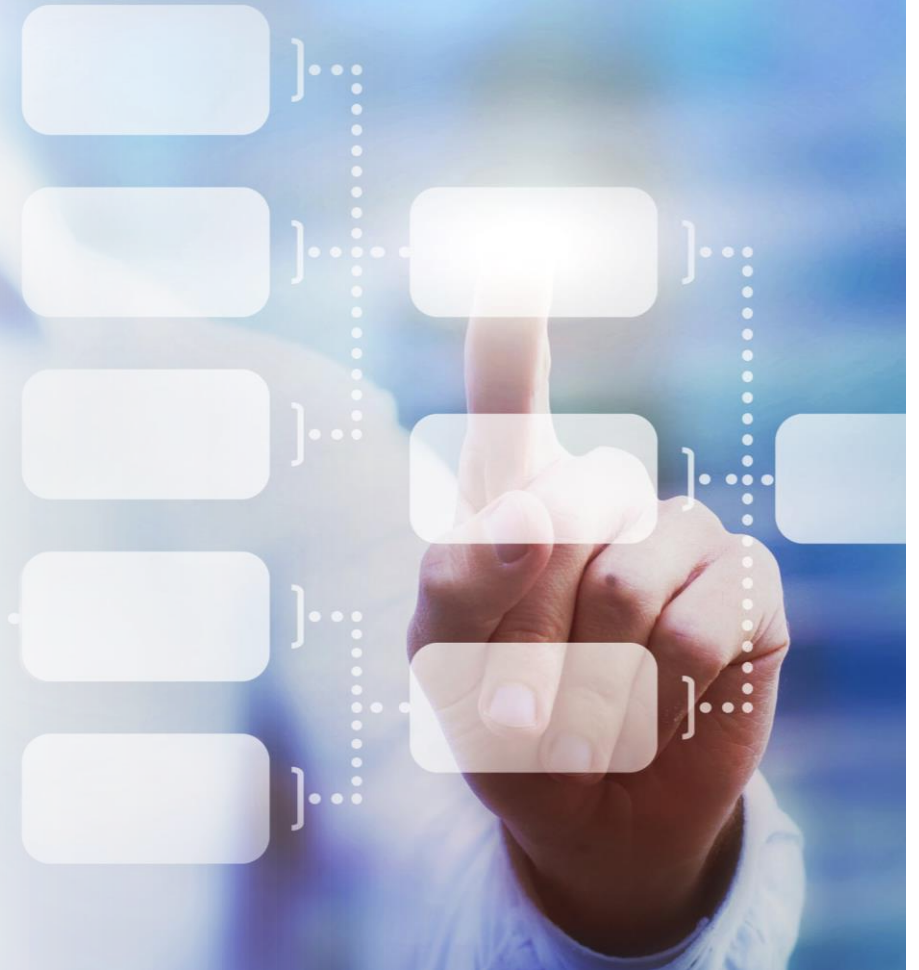


Sandia  
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## Sandia National Laboratories

# Disclaimer

- Not an expert in Neurohacking
- Emerging field with ethical, medical, societal implications
- Using the technologies/medications to treat medical conditions versus...
- Using for neuroenhancement in healthy individuals
- Discussions are in generality
- Cognitive function is multifaceted, and a single supplement cannot improve it all
- Improving one facet may decrease another aspect
- homeostasis



# Origins

## Hacking

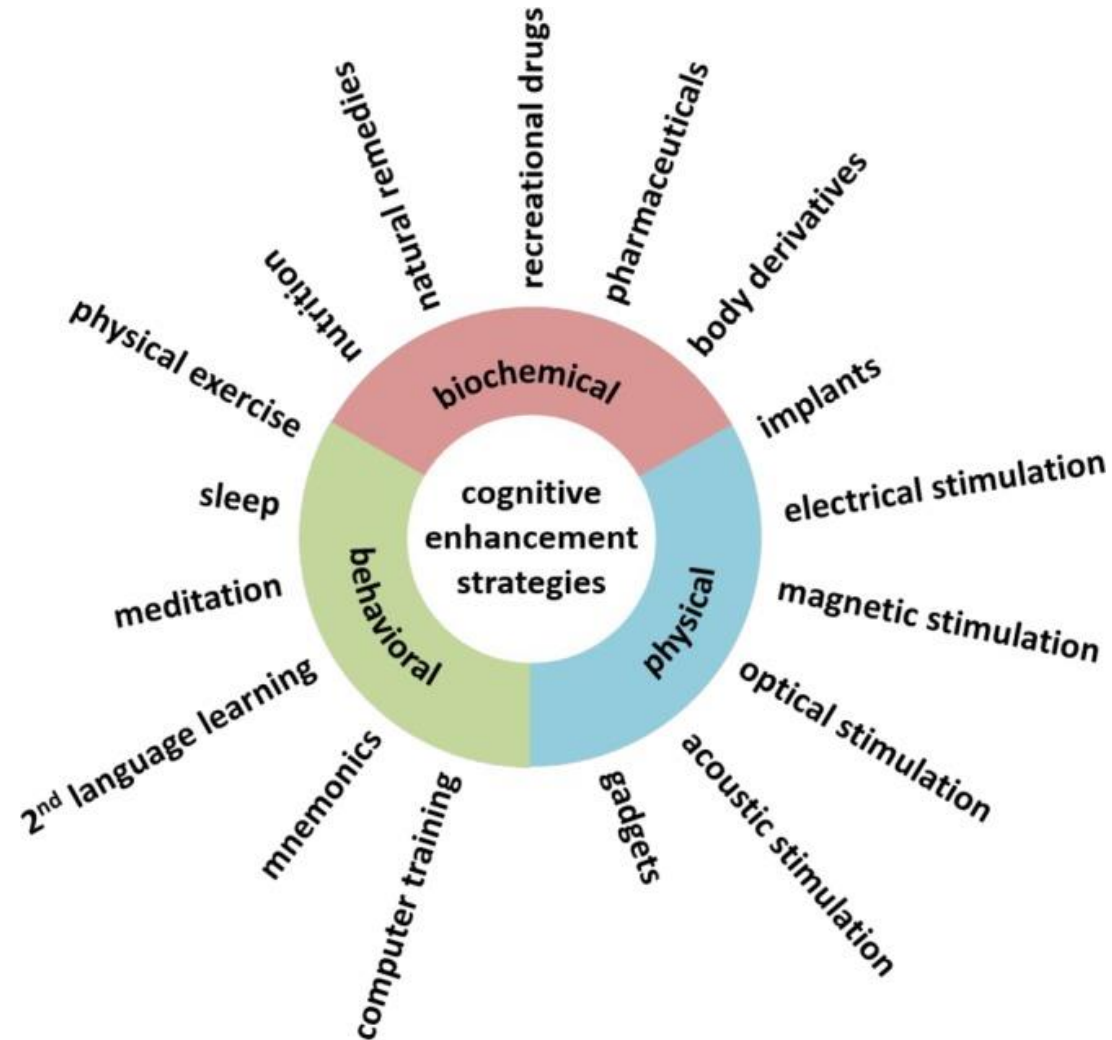
- Hard problems
- Playful exploration
- Duality of individual autonomy and collaboration
- Most effective ways to optimize human experience

## Neurohacking

- Broad term to represent tools to optimize mind brain interface
- Some describe this as software and hardware of the brain
- Both psychological and neurological
- Focus, memory, speed, creativity, flexibility etc.



# Cognitive Enhancement Strategies





# Brain – Key Areas and Functions

- 2% of body weight
- 20% of energy consumed
- 100 billion neurons
- Amygdala
- Pre-frontal cortex
- Hippocampus

## 4 High Impact Mental Abilities

- Creativity
- Executive function
- Emotional self-regulation
- Learning and memory



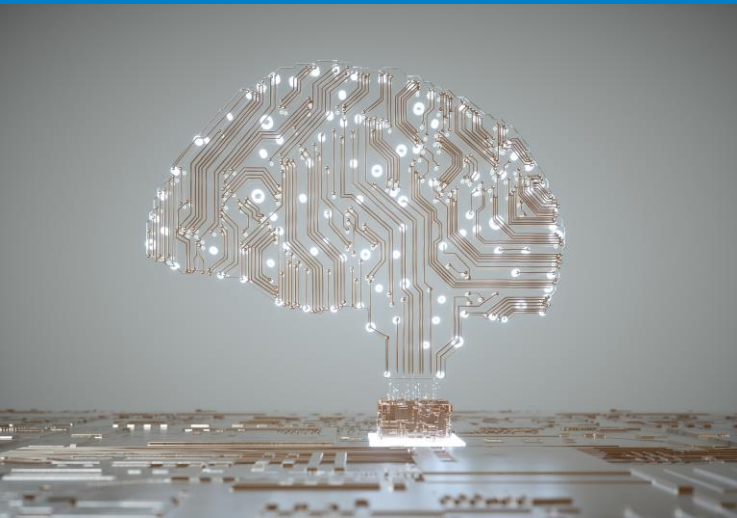
# Two Concepts

## Neuroplasticity

- Establish new connections
- Eliminate unused connections
- Improves learning and adaptation

## Cognitive Reserve

- Using alternate pathways to transmit information



# Nutritional Neurohacking

## Brain Healthy Food/Diet

- DASH Diet
- Mediterranean Diet
- Mind Diet
- Supplements

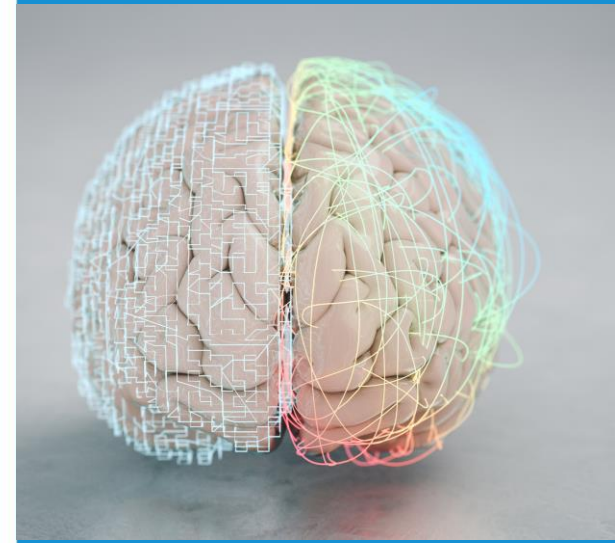
## What to Avoid

- Alcohol
- Gluten
- Glutamate
- High sugar
- Advanced Glycation ES (AGES)



# Exercise for Neurohacking

- Alzheimer's
- Type 3 diabetes
- One new case of dementia diagnosed every 4 seconds globally
- Directly improves brain function – insulin resistance, inflammation and growth factors
- Increases size of hippocampus – University of British Columbia
- Increase prefrontal cortex volume
- Increases brain derived neurotrophic factor (BDNF) – the Miracle-Gro for the brain





## Quiet Mind

- Gained popularity
- Research outcomes are preliminary or no scientific rigor with studies
- Multiple studies showed reduce stress, anxiety, improved sleep

## Sleep

- 1/3 of life is sleep
- 90% repair happens during sleep

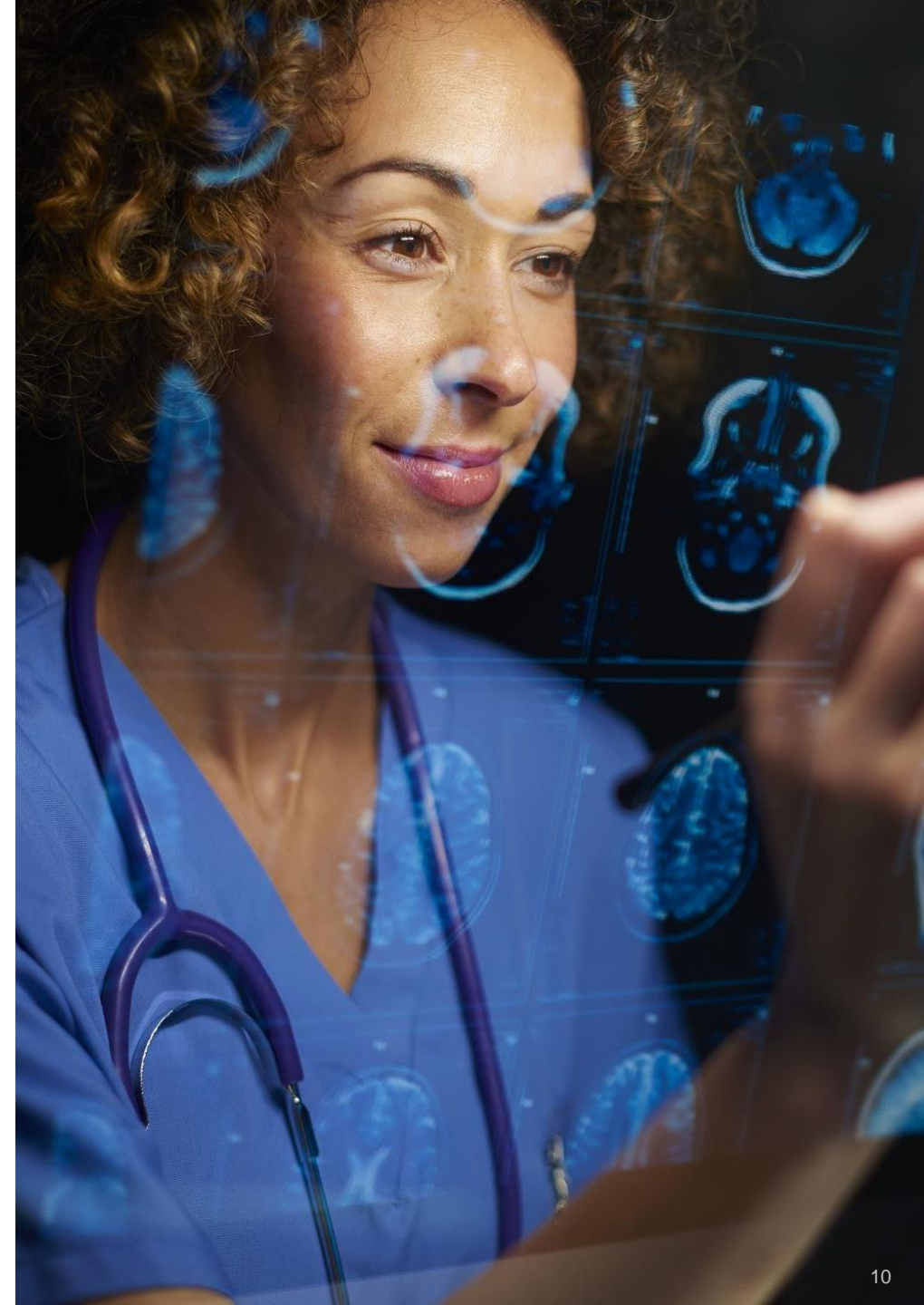
## Stress Reduction

- Effects of stress on brain
- Ways to cope with stress



# Other Modalities – Word of Caution

- Nootropics not FDA regulated
- Efficacy not proven
- Safety not proven
- Humm, Bitbrain – wearable neurotechnology to expand human functions
- Neurostimulation
- Neurofeedback



# Resources

[Smarter Tomorrow: How 15 Minutes of Neurohacking A Day Can Help You Work Better, Think Faster, and Get More Done”](#)

